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## EDUCATIONAL ASSESSMENT & EVALUATION | RESEARCH ARTICLE

# The effects of EFL reading comprehension and certain learning-related factors on EFL learners' reading strategy use

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**Abstract:** Reading strategy use among learners of English as a foreign language (EFL) is one of the most important areas of foreign language (FL) strategy research. Students who actively use their reading comprehension strategies can understand and recall more information from what they read and acquire higher-level language proficiency. The focus of our study was to develop and validate a model for EFL reading strategy use, reading proficiency and two learning-related factors, general English proficiency and English language attitude, among FL/L2 learners in different age groups. The sample was drawn from lower secondary school students in Years 5–8 ( $N_{\text{Students}} = 3912$ ;  $N_{\text{Schools}} = 65$ ). The results showed that young language learners reported using reading strategies more often. We also tested our hypothesized model and proved its validity for each year. The results indicated a significant effect of the variables and showed that EFL reading strategies are mostly influenced by the attitude to English. Proficiency has an indirect effect on the employment of strategy use through attitude. The main significance of our research is that the model we have developed has proved to be valid for each year in the sample.

## ABOUT THE AUTHORS

Anita Habók is an assistant professor at the University of Szeged. She received her PhD in Learning and Instruction from the Doctoral School of Education, University of Szeged, and earned her habilitation degree in 2018. She is involved in teaching various courses on teaching methods, special educational needs and school practice at the BA and MA levels. Her main areas of research interest are learning to learn, EFL strategies, self-regulated learning strategies and the project method.

Andrea Magyar has been a practising EFL teacher in primary and secondary education for over 20 years. She received her PhD degree in ICT in Education at the University of Szeged in 2015. Her main research interests focus on ELT and digital methods in education with an emphasis on language learning strategies. She has presented at national and international conferences and published peer-reviewed research papers on adaptive testing methods and language learning strategies in a number of journals and conference proceedings.

## PUBLIC INTEREST STATEMENT

The different reading techniques among learners of EFL represent one of the most important areas of foreign language learning. Students who have more techniques can better understand what they read and can become more successful readers. We observed lower secondary school students in Hungary. The research investigated the relationship between reading comprehension and reading strategy use in connection with EFL school mark and attitude to English. The results showed that young language learners reported using reading strategies more often than their older peers. We also found that attitude to English largely influences the use of language reading strategies. Despite our expectations, we did not discover a close connection between strategy use and reading comprehension.

**Subjects:** Bilingualism / ESL; Secondary Education; Educational Psychology

**Keywords:** English as a foreign language; reading comprehension; test; reading strategy use; questionnaire; foreign language attitude; foreign language school mark; lower secondary students

## 1. Introduction

In recent years, a number of studies have demonstrated the importance of language learning strategies (LLS) in foreign language (FL) acquisition. Effective strategy use aids students in becoming self-directed and self-regulated learners and in taking responsibility for their own learning (Habók & Magyar, 2018b; Oxford, 1990, 2016). Adequate strategy use assists students in accomplishing certain language tasks more successfully, and learners with a large repertoire of FL or second language (L2) learning strategies perform better (Anderson, 2005; Nagy & Habók, 2018). Strategic learners more skilfully adapt and use different kinds of strategies and acquire higher-level language proficiency (Habók & Magyar, 2018a; Wu, 2008). Green and Oxford (1995) linked skills, progress and the improvement of strategies and defined LLS as “specific actions or techniques that students use, often intentionally, to improve their progress in developing L2 skills” (p. 262). In line with this, one of the most important areas of strategy research falls into the domain of the four language skills: reading, writing, speaking and listening. Among these, reading comprehension is one of the most important areas of FL/L2 strategy research (Anderson, 2005; Baker & Boonkit, 2004; Mokhtari & Sheorey, 2002; Norouzian & Mehdizadeh, 2013; Shang, 2010).

Despite the fact that a large amount of research has recently dealt with reading in the domain of FL/L2 learning, most of it has been conducted among university or college students (e.g. Mokhtari & Reichard, 2002; Oxford, 1990; Sheorey & Baboczky, 2008). While light has been shed on a number of issues, this research is limited to the extent that it can only report on adolescents’ reflections on their techniques, habits and behaviours. It leaves open the question of how young students perform and what strategies they employ when they must comprehend FL/L2 texts. The aim of our study is to fill this gap and build a theoretical model for the FL/L2 reading process on the basis of the existing literature. To test our model, we investigated certain learning-related factors among English as a foreign language (EFL) learners, such as general English proficiency and attitude to English in line with their reading proficiency, and the effects of these factors on reading strategy use preferences.

First, our study provides a comprehensive view of the related literature on reading comprehension processes and FL reading strategy research in relation to other factors, such as EFL school mark and attitude to English. In the second part of the study, we present our research findings. We then offer some pedagogical implications for reading strategy instruction that may be valuable for FL teachers.

## 2. Theoretical background

### 2.1. Reading as a strategic process

Reading is an essential skill for success in real life, and reading literacy can generally be defined as “understanding, using, evaluating, reflecting on and engaging with texts in order to achieve one’s goals, to develop one’s knowledge and potential and to participate in society” (OECD, 2018, p. 11). With this definition, the OECD broadened the basic term *reading*, which had principally been used as a technical term for the process of decoding. Now it also involved a number of cognitive and linguistic processes from decoding words, reading comprehension, the complex interactions between the reader and text, and the reader’s background to his or her expectations and decision-making. The term “reading literacy” refers to the “active, purposeful and functional application of reading in a range of situations and for various purposes” (OECD, 2018, p. 12). The definition also

involves metacognitive competencies, as the reader thinks, monitors, evaluates or reflects on the text to reach his or her particular goal.

A number of theories and models have also recently been proposed on selected components and processes that occur while reading (Perfetti & Stafura, 2014). Rayner and Reichle (2010) differentiated models of word identification, models of syntactic parsing, models of discourse processing and models of eye movement control. Kendeou, McMaster, and Christ (2016) reported on models that focus on the identification of component skills, e.g. word decoding (Ehri, 2014) and vocabulary knowledge (Quinn, Wagner, Petscher, & Lopez, 2015). The second set of models they reported is concerned with the identification of various processes and the construction of a mental representation during reading, such as the Construction-Integration model (CI; Kintsch & van Dijk, 1978), which has become one of the most influential models among educators.

Grabe (2009) divided reading processes into two sections: lower-level and higher-level abilities. Both processes occur in working memory. Lower-level abilities include certain morphological and syntactic processes, phonological awareness, automatic word recognition and other semantic processes. Higher-level abilities involve processes that are closely tied to certain techniques that the reader consciously employs to obtain meaning from the text, e.g. finding the main idea, integrating meaning across sentences, inferencing, comprehension monitoring and goal setting. These processes are closer to conscious introspection and metacognitive awareness, and demonstrate strategic processing to build a coherent understanding of the text. While reading, the reader identifies the text structure, predicts, makes inferences, monitors comprehension and deduces meaning on the basis of his or her prior knowledge and reading goals and finally constructs a coherent mental representation (situation model) of the text in his or her memory, which reflects the overall meaning of the text (Kintsch, 2012).

Researchers claim that reading in one's native language (L1) and doing so in an FL/L2 share a number of constituent skills and that the underlying cognitive processes are very similar. Both involve interactions between the reader and the text, and both entail certain other cognitive and metacognitive processes (Farnia & Geva, 2013; Goodman, 1982; Nikolov & Csapó, 2010, 2018). At the same time, all these processes also involve significant differences, such as diverse linguistic systems and different cultural and socio-economic contexts in which readers must decode the message (Marx et al., 2015; Melby-Lervåg & Lervåg, 2014; Zúñiga, 2001). According to Grabe (2009), the key differences between L1 and FL/L2 stem from the "more limited skills in processing L2 texts, less exposure to L2 reading experiences, fewer experiences in using L2 texts, and limited L2 linguistic, social, and cultural knowledge" (p. 107). Others also point out the differences in decoding and vocabulary as significant factors of FL/L2 reading comprehension (Pasquarella, Gottardo, & Grant, 2012). Grabe (2009) also emphasized reading as a strategic process, pointing out that readers are required to employ different skills and knowledge while reading, which aid them in obtaining text-related information, such as selecting key information and main ideas, collecting, organizing and summarizing information, and correcting comprehension breakdowns.

These definitions of reading share the core idea that comprehension results from certain mental processes and that readers employ a vast number of strategic processes while reading as they interact with the text. These strategic procedures are described by Pilonieta (2010) as "conscious, deliberate, and flexible plans readers use and adjust with a variety of texts to accomplish specific goals" (p. 152). Trehearne (2015) defines them as "conscious plans—sets of steps that good readers use to make sense of text when reading" (p. 446). Likewise, El-Koumy (2016) also observes that "reading strategies are conscious procedures that help readers to comprehend what they read and to repair breakdowns in comprehension" (p. 95).

A vast amount of research has focused on identifying and classifying reading strategies that assist students in becoming effective strategic readers (2005; Anderson, 2002; Chamot, 2004; Habók, 2015; Habók & Babarczy, 2018; Han, 2017, 2018; Mokhtari & Reichard, 2002; Mokhtari &

Sheorey, 2002; Shang, 2010; Zhang & Wu, 2009). Scholars have often followed Oxford's (1990) categorization of six sets of learning strategies and differentiated memory, and cognitive, compensation, metacognitive, social and affective reading strategies (Baker & Boonkit, 2004; Han, 2017; Upton, 1997). As a whole, she deals with language-learning strategies in general. She has not focused on specific language skills in her model. Based on this model, some scholars (e.g. Baker & Boonkit, 2004; Palincsar & Brown, 1984; Pressley, 2000; Vaughn & Linan-Thompson, 2004) have focused on FL reading and have classified FL reading strategies on the basis of the reading process involved. They differentiate between pre-reading, while-reading and post-reading strategies. Sariçoban (2002) has confirmed that pre-reading activities aid students in foreseeing what they know about a topic and predict what they will read. These strategies also focus on students' attention on the main points of the text. Such pre-reading comprehension strategies include looking for goals in reading, activating prior knowledge and asking questions. While reading, effective readers use various strategies to comprehend the text and construct meaning. Highly efficient readers consciously employ certain reading strategies. These include finding the main idea, taking notes and underlining key expressions in the passage. Constructing meaning after reading is just as important as doing so before and during the reading process. To gain a deeper understanding of the text, readers must employ certain post-reading strategies, such as summarizing, reviewing, monitoring, elaborating and evaluating. Based on these theories, a theoretical model of the FL/L2 reading process can be created to focus on the different mental processes during FL reading.

## 2.2. Research on reading strategy use

A number of studies have focused on measuring reading strategy use among FL and L2 students. Some of them have found a significant effect of strategy use on reading performance in various groups. Sheorey and Mokhtari (2001) investigated the reported use of EFL reading strategies among 150 native-speaker and 152 ESL college students in reading academic materials. They found that both groups of students displayed a high level of awareness of almost all the reading strategies included in the survey. Their study also showed that it was the high EFL reading ability students in both groups that reported a higher-level use of cognitive and metacognitive reading strategies than the low-reading ability students.

Other studies did not find a significant relationship between strategy use and reading performance. Fitriisa, Tan, and Yusuf (2015) examined the FL reading performance of secondary school students in Indonesia in terms of their awareness of reading strategies. Their results indicated a weak positive relationship between strategy use and scores in reading comprehension. No significant difference was observed in strategy use between good and poor readers either. Nor did Guo and Roehrig (2011) find a significant relationship between strategy use and FL reading comprehension among their participants, concluding that this was due to the low FL/L2 proficiencies of the sample.

Some research investigated reading strategy use during the reading process and found that there were different strategies used by successful and less successful readers in the different phases of reading. Sariçoban (2002) observed upper intermediate EFL students and did not discover a significant difference in strategy use in the pre-reading phase in the two groups. However, in the while-reading phase, the most preferable strategies employed by successful readers were analysing arguments and focusing on descriptions and certain kinds of verbs, as these strategies aid most in understanding the message of the text. Less successful readers also focused on some kinds of verbs, mostly on those that convey mental processes and actions. After reading, the two groups differed in their use of two kinds of strategies: evaluating and commenting. Efficient readers often evaluated and attempted to comment on the encoded message of the writer to expand their understanding of the text.

Nordin, Rashid, Zubir, and Sadjirin (2013) also observed the use of different reading strategies among EFL learners at tertiary level. They found that both high and low achievers frequently used

certain reading strategies to grasp the meaning of the text. The high achievers reported more frequent use of post-reading strategies than the low achievers, who tended to use while-reading strategies more often. As regards the pre-reading phase, the high achievers preferred “to scan through the chapter introductions/summaries before reading the whole text”, while the low achievers preferred “to think about the best way to understand a new chapter or a text” (p. 471). As regards the while-reading phase, the high achievers tended to guess meaning in context, while the low achievers preferred to reread difficult expressions and sentences. As for the post-reading phase, both groups preferred recalling content.

A considerable number of studies have focused on strategy use in relation to other learning-related factors. Many of them have found a positive correlation between the frequency of strategy use and language proficiency. Zhang, Gu, and Hu (2008) investigated language learning strategies among students in Years 4–6. The main outcome of their study is that the pupils’ reading strategy use varied according to language proficiency and year, and the higher-proficiency students outperformed those with lower proficiency. Students in higher years also outnumbered those in lower years in terms of the number of strategies they used.

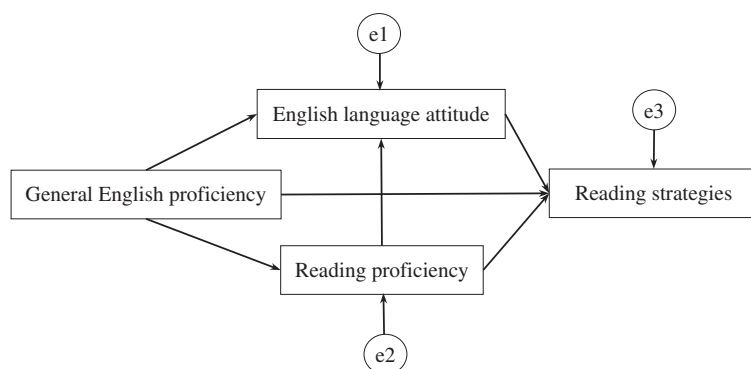
Bakhshalinezhad, Nikou, and Bonyadi (2015) examined strategy use among advanced and intermediate EFL learners when reading in English. They found that higher-level students employed more strategies more frequently than students at the intermediate level. Further, they observed that the most frequently employed reading strategies among advanced students were the following: evaluating, recalling, restating, title awareness and summarizing. Similarly, Han (2018) found that high-performing EFL students reported using more cognitive and metacognitive strategies than low-performing students. Ghavamnia, Ketabi, and Tavakoli (2013) investigated differences in type and frequency of strategy use among four proficient and four less proficient Iranian students. They reported that all eight students demonstrated characteristics of “active strategic readers” (Ghavamnia et al., 2013, p. 363) and employed a wide range of strategies, but the least proficient readers primarily used these strategies “haphazardly and unsystematically” (p. 370). Endley (2016) also investigated EFL students’ use of reading strategies in relation to proficiency as a variable. He found that the students in the sample were already in possession of a large number of strategies, but they were often unable to use them effectively. This happened with the low-proficiency readers in particular.

Some scholars have sought to find a probable link between learning strategies and certain affective factors, such as attitude and motivation, which are considered essential during the language learning process. Jabbari and Golkar (2014) conducted a study involving a sample of 100 Persian EFL learners and investigated the relationship between their language learning strategies and attitudes. They found a positive significant correlation between students’ attitudes and their use of language learning strategies. EFL learners with a more positive attitude employed more language learning strategies. They preferred cognitive, compensation, metacognitive and social strategies more than learners with a negative attitude. Kırmızı (2011) conducted a study with 1316 students in Years 4 and 5 in 15 elementary schools in Turkey. She found learners’ attitude to reading in their native language was a significant predictor of the level of reading comprehension strategies they used. Türkyılmaz (2015) also noted a significant relationship between students’ metacognitive awareness of reading strategies and their attitude to reading in their native language. He concluded that “reading attitude for a student increases when a student’s metacognitive awareness of reading strategies scales up” (p. 15).

### 3. Model development

The main outcome of the literature review is that students need to learn to use a variety of effective reading strategies to comprehend FL texts and that higher-proficiency students can use them most effectively. Most of these studies establish a close relationship between language proficiency, attitude to reading and the employment of reading strategies in the samples investigated. However, the samples for these previous studies were drawn from certain age groups and did not differentiate between the number of years students had been learning their FL/L2.

**Figure 1. Hypothesized path model for EFL reading strategy use, reading proficiency and learning-related factors.**



Moreover, neither of these studies investigated these factors all together, nor could they establish a valid model structure that contains all of these factors. These findings have guided the development of our hypotheses and the analyses in our research.

On the basis of a review of previous research findings, we have developed a hypothesized path model (Figure 1), which focuses on constructs drawn from previous studies and which also takes account of age groups with varying levels of experience. As the structural model shows, our present study hypothesizes four constructs: one exogenous construct, general English language proficiency, which is indicated by EFL school mark; and three endogenous constructs, EFL reading proficiency, which is indicated by an EFL reading comprehension test result, attitude to English and reading strategy use. We hypothesize six structural relationships: the direct effects of general English proficiency on each of the other three constructs, of reading proficiency on attitude to English, and of both reading proficiency and attitude on strategy use.

#### 4. Research question

The main purpose of our research was to test this structural model. To confirm our assumptions, we investigated FL/L2 learners' general English proficiency in different age groups, their attitude to English and their reading proficiency as indicated by actual performance on EFL reading materials and the effects of these factors on reading strategy use. The research questions addressed were as follows:

RQ1. Are there significant differences between the years (Years 5–8) in frequency of reading strategy use and in reading proficiency?

RQ2. What is the relationship between attitude to English, general English proficiency, reading proficiency and foreign language reading strategy use for lower secondary school students?

#### 5. Methods

##### 5.1. Instruments

Data for the research were gathered with two different instruments. First, a reading strategy questionnaire was employed, which had been developed by Baker and Boonkit (2004) and adapted by Norouzian and Mehdizadeh (2013). In their questionnaire, they divided strategy use into three phases: the first category focused on general reading strategies (2 items) and pre-reading strategies (7 items), such as considering the aim of reading the text, creating questions about the text, and reading headings and figures, for example, "I think about the reasons why I am reading the text". The while-reading strategies (15 items) analysed text processing, such as scanning the text, selecting the main idea, taking notes and making predictions, for example, "I check my predictions about the text while reading". The post-reading strategies (8 items) measured the learner's activity after finishing reading, such as



summarizing, discussing the text, noting unfamiliar words, and monitoring and evaluating the reading process: “I summarize the text after I finish reading it” (see Appendix 1). Each statement on the original questionnaire was translated into Hungarian by two independent ELT experts, and the translations were compared and discussed with the final version constructed for the Hungarian sample. As for the structure of the questionnaire, we retained the original three categories of pre-, while- and post-reading strategies. We only adjusted general reading strategies to the pre-reading strategy category. As there were no culture-specific issues included in the original questionnaire, it was possible to translate the items almost one by one without any substantial change. Students responded on a 5-point Likert scale.

We approach proficiency from two perspectives. First, students self-reported their EFL school mark on a 5-point scale. FL school marks are significant assessment tools in our country. They show teachers’ assessment of students’ comprehensive knowledge of a foreign language. Second, we used a reading comprehension test from an EFL coursebook at A1 level to assess students’ proficiency levels. The continuous descriptive test consisted of about 200 words. The reading test contained only closed constructed response items; in other words, the students had to select their responses from a given list. On the first task (1 item), we asked students to choose a title for the text. On the second task (4 items), participants provided headings for the paragraphs. On the third task (8 items), learners completed sentences by selecting the correct response from a list. On the fourth task (6 items), they answered certain text-related questions that focused on some particular information included on the test. The students had to choose the right answers from among the ideas given. Each correct item was assigned 1 point, so a total of 19 points was possible. After completing the measurement tool, both the teachers and students received immediate feedback on the reading comprehension test results via the online system. The teachers were also informed of the students’ questionnaire ratings from the administrators of the online system.

Finally, the students self-reported their EFL attitude on a 5-point scale. This background subfield has been employed before in other research reliably measuring students’ attitudes towards EFL (Habók & Magyar, 2018a).

## 5.2. Participants

The participants of the study were 3912 lower secondary school students aged 11–14 from 65 schools in Hungary.

Every student had EFL as a compulsory school subject. The students were between the elementary and pre-intermediate levels. EFL school mark indicated an average of 4.07 on a 5-point scale, where five is the highest value. Attitude to English was lower, 3.11 on the 5-point scale (Table 1).

## 5.3. Design and procedure

The present research was conducted via the eDia online testing platform (edia.hu), which has been developed by the Centre for Research on Learning and Instruction at the University of Szeged and is used for online measurements (Molnár & Csapó, 2019). Completing the reading test and the questionnaire took one school lesson. The school lesson was selected by the schools. The testing

**Table 1. Sample number, school mark and attitude**

Years	N	Absent	Total	School Mark M(SD)	Attitude M(SD)
5 (11 years old)	1180	36	1216	4.37(.82)	3.14(.73)
6 (12 years old)	985	22	1007	4.03(.97)	3.10(.73)
7 (13 years old)	900	20	920	4.10(.91)	3.13(.71)
8 (14 years old)	758	11	769	3.85(1.02)	3.05(.75)
Total	3823	89	3912	4.07(.93)	3.11(.73)

procedure was designed as follows: First, students completed the pre-reading strategy questionnaire. Second, they did the reading task. Third, they completed the while-reading and post-reading strategy questionnaire. Finally, we asked for some background data, their attitude to English and their EFL school mark. The reason for this process was that we wanted to simulate a lifelike situation. Students worked independently during the testing procedure. Some information on the research was provided for the students at the beginning, and then they completed the measurement tool according to the instructions.

The IRB at the Doctoral School (University of Szeged) approved the research project. The required written consent was arranged by the schools. Student answers are treated confidentially and will not be disclosed to third parties. The students received an identification code to enter the online platform. Codes are handled through the school administration. The researchers have no access, and the database is thus anonymous. At the end of the research, students received immediate individual feedback on their test results on their computer monitor. Feedback on their reading strategies results was also provided. However, the evaluation was sent to the schools via the administrative office, since we can only incorporate automatic correction of the tests in the online system, not evaluation of the questionnaires.

We used SPSS Statistics 23.0 for data analysis. First, we examined reliability, means and standard deviations. Then, we conducted ANOVA analyses. Homogeneity of variances was assessed by Levene's test and then Tukey's-b or Dunnett's T3 post-hoc tests to determine differences between variables. A confirmatory factor analysis was employed to confirm the factor structure of the questionnaire. We also conducted correlation and path analyses to identify relations and investigate the directions of links between EFL cognitive variables, reading strategy use and attitude. The SEM is an appropriate method to test the relations and directions between variables and can identify direct and indirect relations between them. One-headed arrows show direct paths, while double-headed arrows indicate mutual relations.

IBM SPSS AMOS 23.0 was used for the analysis. The following goodness of fit indices were employed to evaluate model fit: the chi-square test, comparative fit index (CFI), Tucker-Lewis Index (TLI), root-mean-square error of approximation (RMSEA) and normed fit index (NFI) (Kline, 2015). Chi-square statistics aimed to select the appropriate structural model among the hypothesized nested models. The difference in chi-square as a ratio of the difference in df was examined with the significance of the p-value. As Kline (2015) noted, the chi-square test statistic is sensitive to sample size, and significant chi-square values are regularly found when large samples are involved. We therefore also counted CFI and TLI values, as they are not sensitive to sample size. They range from 0 to 1, with larger values indicating a better fit. A regularly larger value than .90 indicates an acceptable model fit. NFI ranges between 0 and 1, with a cut-off value of .95 or greater indicating a good model fit. It examines the discrepancy between the chi-square value of the hypothesized model and that of the null model. The RMSEA also calculates the model fit, while it indicates the complexity of the model structure. It also ranges from 0 to 1, with smaller values suggesting a better model fit. A value of .08 or less usually represents a good model fit.

## 6. Results

### 6.1. Descriptive analyses

First, we investigated the reliability of reading strategies and test tasks for the years. On the whole, we found acceptable reliability estimates for the whole questionnaire (.87 Crb $\alpha$ ), for the questionnaire fields (Table 2) and for each of the items (Appendix 1). The internal consistency of the reading comprehension test was also high (.90 Crb $\alpha$ ): acceptable for tasks 1, 2 and 4, and good for task 3 (Table 2).

We conducted a confirmatory factor analysis to confirm the factor structure of the questionnaire. The results showed a good KMO index (.897), which reinforced the unidimensionality of the questionnaire. The average strategy use for the sample was 58% (SD = 14). The results for each



**Table 2. Reliabilities for reading strategy use and reading test results**

Years	Reading strategy use (Crba)	Reading test results (Crba)			
		Whole	Tasks 1 & 2	Task 3	Task 4
Year 5	.88	.87	.66	.81	.70
Year 6	.88	.90	.73	.84	.73
Year 7	.87	.90	.75	.85	.75
Year 8	.86	.90	.77	.89	.78

statement for the whole sample are presented in Appendix 1. The confirmatory factor analysis did not reinforce the three-factor structure of the questionnaire (chi-square = 7029.650,  $df = 461$ ,  $p = .000$ , CFI = .748, TLI = .712 and NFI = .736 RMSEA = .060); thus, the scale was thereafter regarded as unidimensional.

We analysed students' strategy use by year (Table 3). The results from the ANOVA confirmed our assumptions. Our rationale for using the ANOVA was borne out. There were no outliers, and the data were normally distributed for each year (assessed by the Shapiro–Wilk test,  $p > .01$ ). There was a statistically significant difference between groups as determined by one-way ANOVA ( $F_{\text{Reading}} = 22.3$ ,  $p < .001$ ;  $F_{\text{Pre-reading}} = 7.5$ ,  $p < .001$ ;  $F_{\text{While-reading}} = 31.7$ ,  $p < .001$ ;  $F_{\text{Post-reading}} = 16.8$ ,  $p < .001$ ). Homogeneity of variances was violated ( $p < .001$ ); therefore, Dunnett's T3 test was applied. The post hoc test found that the strategy use results for Year 5 were significantly separate from those for Years 6–8 with regard to higher frequencies on the whole questionnaire.

As for the reading test results, the mean performance for the whole test was 63% (SD = 27%). The test confirmed the rationale for conducting the ANOVA. There were no outliers, and the data were normally distributed for each group (as was assessed by the Shapiro–Wilk test,  $p > .01$ ). There was a statistically significant difference between groups as determined by the one-way ANOVA ( $F = 228.2$ ,  $p < .001$ ). Homogeneity of variances was assessed by Levene's test ( $p < .001$ ). There was a violation of the assumption of homogeneity; therefore, Dunnett's T3 post hoc test was employed. It revealed that the results for Year 5 were statistically significantly lower compared to those for Years 6–8; moreover, the results for Year 6 were also significantly lower than those for Years 7–8 (Table 4). Years 7 and 8 achieved significantly higher scores than the lower years. This confirms our assumptions that the test significantly differentiated between students, and we can use a student's test result as an indicator of proficiency.

## 6.2. The process of model testing

First, we tested correlations between questionnaire field and background variables (Tables 4 and 5). As regards correlational coefficients, we found significant relations between EFL reading strategy use, test result, school mark and attitude. While English school marks show the students' general English proficiency and English test results show their actual reading proficiency, there were significant relationships between the two in each year ( $r_{\text{Year5}} = .38$ ;  $r_{\text{Year6}} = .57$ ;  $r_{\text{Year7}} = .53$ ;  $r_{\text{Year8}} = .58$ ). The results indicate increasingly stronger relationships between the coefficients, implying that school

**Table 3. Differences in strategy use by year**

Strategies	Year	M (%)	SD (%)	F	p<	Sig.
Reading strategy use (%)	Year 5	60	15	22.3	.001	Year 5 > Year 6; Year 5 > Year 7; Year 5 > Year 8; Year 6 > Year 8
	Year 6	58	14			
	Year 7	56	14			
	Year 8	56	13			

**Table 4. Differences in reading test results by year**

Reading test	Year	M (%p)	SD (%)	F	p<	Sig.
Reading test results (%p)	Year 5	47	26	228.2	.001	Year 5 < Year 6; Year 5 < Year 7; Year 5 < Year 8; Year 6 < Year 7; Year 6 < Year 8
	Year 6	58	28	28		
	Year 7	72	26	26		
	Year 8	75	27	27		

**Table 5. Correlations between EFL reading strategy use, test result, school mark and attitude for years 5**

	RSU	ERTR	ESM	AE
Reading strategy use (RSU)	1			
EFL reading test result (ERTR)	.06*	1		
EFL school mark (ESM)	.18**	.38**	1	
Attitude to English (AE)	.27**	.28**	.39**	1

p < .001\*\*, \*p < .05

marks reliably predict performance and proficiency in later years. As regards the students' attitudes, this showed significant correlations with each factor (Table 5).

As for the years, the highest correlational coefficients in Year 5 were between EFL school mark and attitude to English ( $r = .39$ ) (Table 5). The lowest relations were between EFL test result and strategy use ( $r = .06$ ). In Year 6 (Table 6), the strongest link was observed between EFL school mark and reading test result ( $r = .57$ ). The lowest but still significant relations were found between reading strategy use and test result ( $r = .06$ ).

In Year 7 (Table 7), we found the highest significant correlational coefficients for EFL reading test result and EFL school mark ( $r = .53$ ). The lowest but still significant correlations were found between reading strategy use and EFL school mark ( $r = .12$ ); however, reading strategy use and EFL reading test result did not indicate a significant correlation coefficient. As regards the Year 8 students' results (Table 8), the strongest correlation was found between the reading test result and EFL school mark ( $r = .58$ ). A lower but still significant correlation was ascertained between reading strategy use and EFL reading test result ( $r = .15$ ) (Table 6).

The significant correlations in each year made it possible to implement structural equation modelling (SEM). Hence, we carried out SEM on our hypothesized model (Figure 1). We assumed six structural relationships in our structural model: that general English proficiency has a direct effect on each of the other constructs, that EFL reading proficiency has direct effects on a student's attitude to English, and that all these factors directly influence the person's reading strategy use.

**Table 6. Correlations between EFL reading strategy use, test result, school mark and attitude for years 6**

	RSU	ERTR	ESM	AE
Reading strategy use (RSU)	1			
EFL reading test result (ERTR)	.06*	1		
EFL school mark (ESM)	.17**	.57**	1	
Attitude to English (AE)	.25**	.37**	.44**	1

p < .001\*\*, \*p < .05

**Table 7. Correlations between EFL reading strategy use, test result, school mark and attitude for years 7**

	RSU	ERTR	ESM	AE
Reading strategy use (RSU)	1			
EFL reading test result (ERTR)	n.s.	1		
EFL school mark (ESM)	.12**	.53**	1	
Attitude to English (AE)	.22*	.38**	.45**	1

$p < .001^{**}$ ,  $*p < .05$

**Table 8. Correlations between EFL reading strategy use, test result, school mark and attitude for years 8**

	RSU	ERTR	ESM	AE
Reading strategy use (RSU)	1			
EFL reading test result (ERTR)	.15**	1		
EFL school mark (ESM)	.20**	.58**	1	
Attitude to English (AE)	.29**	.42**	.50**	1

$p < .001^{**}$ ,  $*p < .05$

The fit indices for the testing are demonstrated in Table 9. As for the results, we discovered a non-fitted model for Years 5 and 6, since the RMSEA values were over the acceptable level (.08). Although the model showed good fit indices for Years 7 and 8, we were not able to indicate the direct effect between English proficiency and strategy use, as the standardized estimates were not significant ( $\beta_{\text{Year7}} = -.05$ ,  $\beta_{\text{Year8}} = .04$ ).

After examining the parameter estimates and fit indices, we conducted model modifications to the original structural model for a better fit. The modification stemmed from the theoretical consideration, as the supposed direct relationships between proficiency and strategy use were replaced by indirect ones.

The model produced good fit indices in every year (see Table 10). CFI and TLI were higher than .90, and NFI was higher than .95. RMSEA was less than .08 in each year, indicating that the model fits the data well Figure 2.

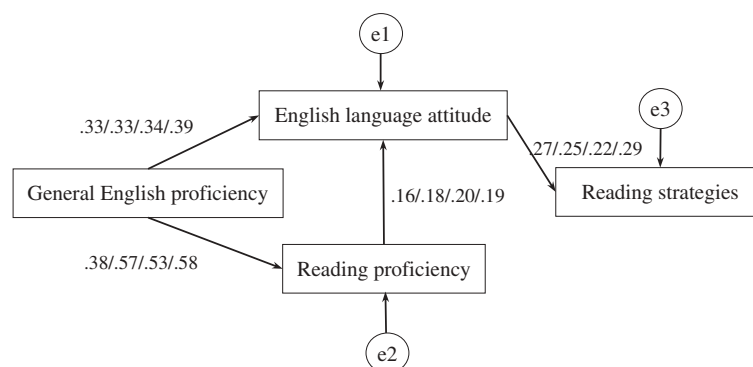
**Table 9. Fit indices for the hypothesized model**

	Chi-square	df	p =	CFI	TLI	NFI	RMSEA
Year 5	10.921	1	.001	.980	.799	.978	.090
Year 6	8.336	1	.004	.989	.894	.988	.085
Year 7	1.535	1	.215	.999	.991	.997	.024
Year 8	2.713	1	.100	.997	.972	.996	.047

**Table 10. Fit indices for the measurement model**

	Chi-square	df	p =	CFI	TLI	NFI	RMSEA
Year 5	11.250	2	.004	.981	.906	.978	.062
Year 6	9.397	2	.009	.989	.946	.987	.061
Year 7	3.971	2	.137	.997	.983	.993	.033
Year 8	3.869	2	.144	.997	.985	.994	.035

**Figure 2. The path model for EFL reading strategy use, reading proficiency and learning-related factors (All coefficients are standardized and significant. Path coefficients on the arrows are presented in the following order: Year5/Year6/Year7/Year8. So path coefficients for Year 5 are presented on the left of the slashes. The next value indicates Year 6 results, the next Year 7 results. Finally, Year 8 results are presented on the right of the slashes.).**



## 7. Discussion

The main objective of the present research was to explore relations between certain learning-related factors among lower secondary school students, such as general English proficiency and attitude to English, in line with their reading proficiency, and the effects of these factors on reading strategy use preferences. The research reinforced the close relationship between these fields and implied that a theoretical model of the FL/L2 reading process can be developed that also regards the different years.

First, we explored the reading strategies of the sample with a questionnaire developed by Baker and Boonkit (2004) and Norouzian and Mehdizadeh (2013), which observed strategy use in three phases, pre-, while- and post-reading. The reliability values of our measurement tools were valid, and the factor structure of the questionnaire proved to be unidimensional. We assumed that students who have been learning a foreign language for a certain period are more experienced learners and strategy users. However, in analysing student responses to the reading strategy questionnaire, we demonstrated that Year 5 learners tend to use reading strategies more often than older students. These findings run counter to results from Zhang et al. (2008) and Bakhshalinezhad et al. (2015), who found that students on a higher level use a wider spectrum of the strategy scale than their lower-level peers. The reason our results may be the same, as Endley (2016) concluded, is that metacognitive awareness among younger language learners is still in a developmental phase, and they are less conscious of which strategy pattern they would prefer while reading. Alternatively, as they are less experienced learners, they cannot precisely assess their strategy use level and therefore they value it higher.

Second, we built a hypothesized path model to explain the structural relationships between English proficiency, attitude and reading strategy use (Figure 1). Proficiency was determined by the students' reading comprehension test results and EFL school marks. As part of the measurement process, the students completed a reading comprehension test, whose results have proved to be a reliable tool for indicating proficiency. While the test results show students' actual performance, EFL school marks indicate students' comprehensive English knowledge as judged by teachers. These two together can reliably indicate students' proficiency. Our structural model assumed direct effects between the constructs, but the result from the SEM analysis confirmed a somewhat different factor structure. Among the six hypothesized structural relationships, four were confirmed in the measurement model: the direct effect of general English proficiency on reading proficiency and attitude, reading proficiency on English language attitude and the direct effect of attitude on strategy use. Our results also confirmed strong relationships between these variables in each year.

Based on a review of previous research (Bakhshalinezhad et al., 2015; Han, 2018; Sheorey & Mokhtari, 2001; Zhang et al., 2008), we expected a close relationship between proficiency and EFL reading strategies in every year within the sample. This runs counter to expectations from our language learning model, and we could not confirm this, as there were no direct paths between proficiency and reading strategies. We observed weak relations between general English proficiency, reading proficiency and strategy use in all the years, implying again that it is not certain that students who use a number of strategies are better readers. These findings are in line with Fitrisia et al. (2015) and Guo and Roehrig (2011), who also found no strong relations between strategy use and reading performance, as well as Endley (2016) and Ghavamnia et al. (2013), who also reported unsystematic and ineffective strategy use among less proficient readers.

We also investigated reading strategy use in the sample in relation to an affective factor, specifically, their attitude to English. Our model showed that attitude to English was directly influenced both by general English proficiency and reading proficiency. Contrary to our expectations from our hypothesized model, reading strategies were not directly influenced by either general English proficiency or reading proficiency. More precisely, proficiency had an indirect effect on strategy use through attitude to English every year. These findings correspond to those of Kırmızı (2011), in which it was also claimed that attitude is a significant predictor of the extent of strategy use among students. Jabbari and Golkar (2014) also found a significant relationship between Persian learners' attitudes and their strategy use. They noted that learners with a more positive attitude employed more language learning strategies. Türkyılmaz (2015) also observed that higher-level strategy users have higher-level attitudes.

To sum up, we developed a hypothesized path model for the FL/L2 reading process. We assumed that a close relationship exists between language proficiency, English language attitude and FL/L2 reading strategies and that proficiency and attitude have a strong effect on reading strategy use. Our hypothesis was confirmed. It was verified that attitude has a direct effect on reading strategy use. Proficiency was determined by two variables: EFL school mark and reading test result. Both had a direct effect on attitude and an indirect effect on strategy use through attitude to English. This model implies that attitude to English plays a central role in English language acquisition, is directly affected by foreign language proficiency and has a direct effect on the use of language learning strategies. The main significance of our research was that the model we developed proved to be valid in each year of the sample.

## 8. Limitations

This study has a number of limitations. First, the generalization of the results is limited due to the fact that the sample was drawn from four different years at the lower secondary school level in Hungary. Second, a self-report instrument and a test were used for data collection, which do not address the children's deeper views on EFL reading. Third, the students completed the questionnaire on pre-reading strategies at the very beginning of the testing procedure, and then they completed the reading test. Therefore, the first part of the questionnaire might have affected their strategy use. This could have led to overestimated correlations between test results and reading strategies.

## 9. Conclusions and pedagogical implications

On the whole, it can be concluded that EFL reading proficiency and strategy use patterns are not directly linked. Instead, attitude to English plays a central role in learner development. This means that teachers need to pay attention to how students approach EFL as a school subject. Motivating tasks and situations need to be planned in the learning process, and children need to be successful in language learning. Our results have indicated that approaches to learning influence students' performance and strategy use.

When analysing the relation between strategy use and reading test results, it can be supposed that the students did not consciously apply the strategies related to the EFL test. The next step could be a more explicit strategy training to make students more aware of strategy use. This could

either be integrated into classroom instruction with teacher guidance or embedded in strategy training programmes (e.g. Altin & Saracaloğlu, 2018; Chamot, 2005; Cohen & Weaver, 2005; Karimi & Dastgoshadeh, 2018).

As teachers, we should struggle to better understand the mental processes that support students' attempts to comprehend a text; we should also aid them, especially struggling readers, in becoming actively involved in the reading process. Increasing students' awareness of their reading comprehension processes is the most important first step toward becoming strategic, thoughtful learners.

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#### Author Contributions

Both authors, AH and AM, designed the study and contributed to the implementation and reporting of this study. Both authors were involved in writing and reviewing the manuscript and approved the final version.

#### Ethics Statement

This research was carried out in accordance with the recommendations of the University of Szeged. The IRB at the Doctoral School of Education (University of Szeged) approved the research project. The required written informed consent was arranged by the schools. Student answers are treated confidentially.

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## Appendix 1 Reading strategy questionnaire

Statement	M	SD	Crba
I often read texts in Hungarian.	3.97	1.04	.69
I often read texts in English.	3.09	1.10	.68
I read the topic or title of the text.	4.00	1.07	.66
I look at the pictures or graphs in the text.	3.91	1.12	.68
I think about the reasons why I am reading the text.	2.76	1.25	.66
I read the first sentence in the text.	3.94	1.24	.66
I try to predict what the text will be about.	3.53	1.30	.66
I ask myself about the author's purpose in writing the text.	2.57	1.26	.67
I read the questions provided (if any) before I read the text.	3.13	1.35	.68
I read the whole text quickly to get the main idea.	3.36	1.23	.75
I translate the text into Hungarian to get the main idea of the text.	3.72	1.19	.75
I check my predictions about the text while reading.	3.12	1.15	.74
I use the vocabulary in the text and the structure of it to help me get the main idea.	3.57	1.05	.75
I must understand every word in the text to get the main idea.	3.42	1.24	.75
I split sentences into words or phrases to understand the text.	2.99	1.29	.75
I take notes or highlight or underline the important points while I am reading the text.	2.81	1.34	.74
I use my real-world knowledge to help me understand the text.	3.96	1.03	.75

(Continued)

<b>(Continued)</b>			
<b>Statement</b>	<b>M</b>	<b>SD</b>	<b>Crba</b>
I scan (read quickly) for the answers to the questions provided with the text (if any).	3.40	1.21	.75
I skip words if I don't know what they mean.	2.58	1.25	.78
I guess the meaning of some words from context clues.	3.58	1.12	.76
I use a bilingual (English-Hungarian) dictionary whenever I need to know the meaning of a word I don't know.	3.37	1.37	.76
I use a monolingual English dictionary whenever I need to know the meaning of a word I don't know.	2.33	1.30	.76
I predict what is going to happen next while reading.	2.58	1.21	.75
I read the text in detail.	4.03	1.05	.75
I make inferences after I finish reading the text.	3.18	1.19	.71
I summarize the text after I finish reading it.	3.66	1.16	.71
I discuss what I understand with my friends or teacher.	3.12	1.29	.72
I go back to read the details in the text to answer the questions (if any).	3.55	1.16	.71
I use a dictionary after I understand the main idea of the text.	2.85	1.27	.72
I take notes on all the new words and phrases in my vocabulary bank.	3.39	1.38	.72
I use information from texts I have read before.	3.66	1.06	.72
I give myself a reward when I have finished.	2.70	1.38	.75



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